



CLAIMS OF APPLICATION NO. 10/323,920

AS OF MARCH 30, 2004

1. (Previously presented) A moisture-harvesting panel assembly for harvesting atmospheric moisture, comprising:

a photovoltaic panel which gathers solar energy during daylight hours, said photovoltaic panel having a light-receiving/condensation surface on which light falls during daylight hours and on which surface atmospheric moisture can condense;

an energy-storing member which stores energy converted from said solar energy by said photovoltaic panel during daylight hours;

and a cooling system that is affixed to said photovoltaic panel so as to cool said light-receiving/condensation surface, said cooling system being powered by said energy-storing member;

wherein said energy-storing member powers said cooling system to cool said light-receiving/condensation surface during periods in the diurnal cycle during which relative humidity is increased, whereby condensation of atmospheric moisture on said light-receiving/condensation surface is enhanced and water formed thereby can be gathered.

2. Cancelled

3. (Currently amended) The panel assembly of claim 1, wherein said [coolant] cooling system comprises a miniaturized cooling system comprising small condenser pumps and micro-channel refrigerant channels.

4. (Currently amended) The panel assembly of claim 1, wherein said [coolant] cooling system comprises a multiplicity of solid state heat pump, thermoelectric coolers.

5. (Original) The panel assembly of claim 1, wherein said energy-storing member comprises a rechargeable battery.

6. (Original) The panel assembly of claim 1, wherein said energy-storing member comprises a capacitor.

7. (Previously presented) A method of harvesting atmospheric moisture, said method comprising:

collecting and storing converted solar energy during daylight hours, when relative humidity is relatively low, using a photovoltaic panel;

during periods in the diurnal cycle during which relative humidity is increased, using said stored, converted solar energy to cool a light-receiving/condensation surface of said photovoltaic panel, whereby condensation of atmospheric moisture on said light-receiving/condensation surface is enhanced; and

collecting water resulting from condensation of atmospheric moisture on said light-receiving/condensation surface.

8. (Previously presented) The method of claim 7, wherein said light-receiving/condensation surface is cooled by means of a cooling system that is affixed to said photovoltaic panel.

9. (New) The panel assembly of claim 1, wherein said energy-storing member is an integral part of said panel assembly.

10. (New) A moisture-harvesting panel assembly for harvesting atmospheric moisture, comprising:

a photovoltaic panel which collects energy in the form of light and converts it to energy in electrical form, said photovoltaic panel having a light-receiving/condensation surface on which surface atmospheric moisture can condense; and

a cooling system that is configured and disposed so as to cool said light-receiving/condensation surface thereof, whereby condensation of atmospheric moisture on said light-receiving/condensation surface can be enhanced and water formed thereby can be gathered.

11. (New) The moisture-harvesting panel assembly of claim 10, wherein said cooling system is affixed to said photovoltaic panel.

12. (New) The panel assembly of claim 11, wherein said cooling system comprises a miniaturized cooling system comprising small condenser pumps and micro-channel refrigerant channels.

13. (New) The panel assembly of claim 11, wherein said cooling system comprises a multiplicity of thermoelectric coolers.

14. (New) A method of harvesting atmospheric moisture, said method comprising:  
using a photovoltaic panel, collecting energy in the form of light and converting said energy in the form of light into energy in electrical form;  
cooling a light-receiving/condensation surface of said photovoltaic panel to cause atmospheric moisture to condense on said light-receiving/condensation surface; and  
collecting water resulting from condensation of atmospheric moisture on said light-receiving/condensation surface.

15. (New) The method of claim 14, further comprising storing said energy in electrical form.

16. (New) The method of claim 14, further comprising cooling said light-receiving/condensation surface of said photovoltaic panel by means of a cooling system and using energy in electrical form to power said cooling system.

17. (New) The method of claim 16, further comprising storing said energy in electrical form produced by said photovoltaic panel, then using said stored energy to power said cooling system.